DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-1095
WOLD AND HUTCHINSON—GEOLOGICAL AND GEOPHYSICAL
DATA SOURCES, LAKE MICHIGAN
SHEET 3 OF 3

LAKE MICHIGAN GRAVITY

Iverson, R.M., 1969, Written communication (Dept. of Geodesy, U.S. Army Topographic Command), data on file with the Defense Mapping Agency, Gravity Division, St. Louis, Mo.

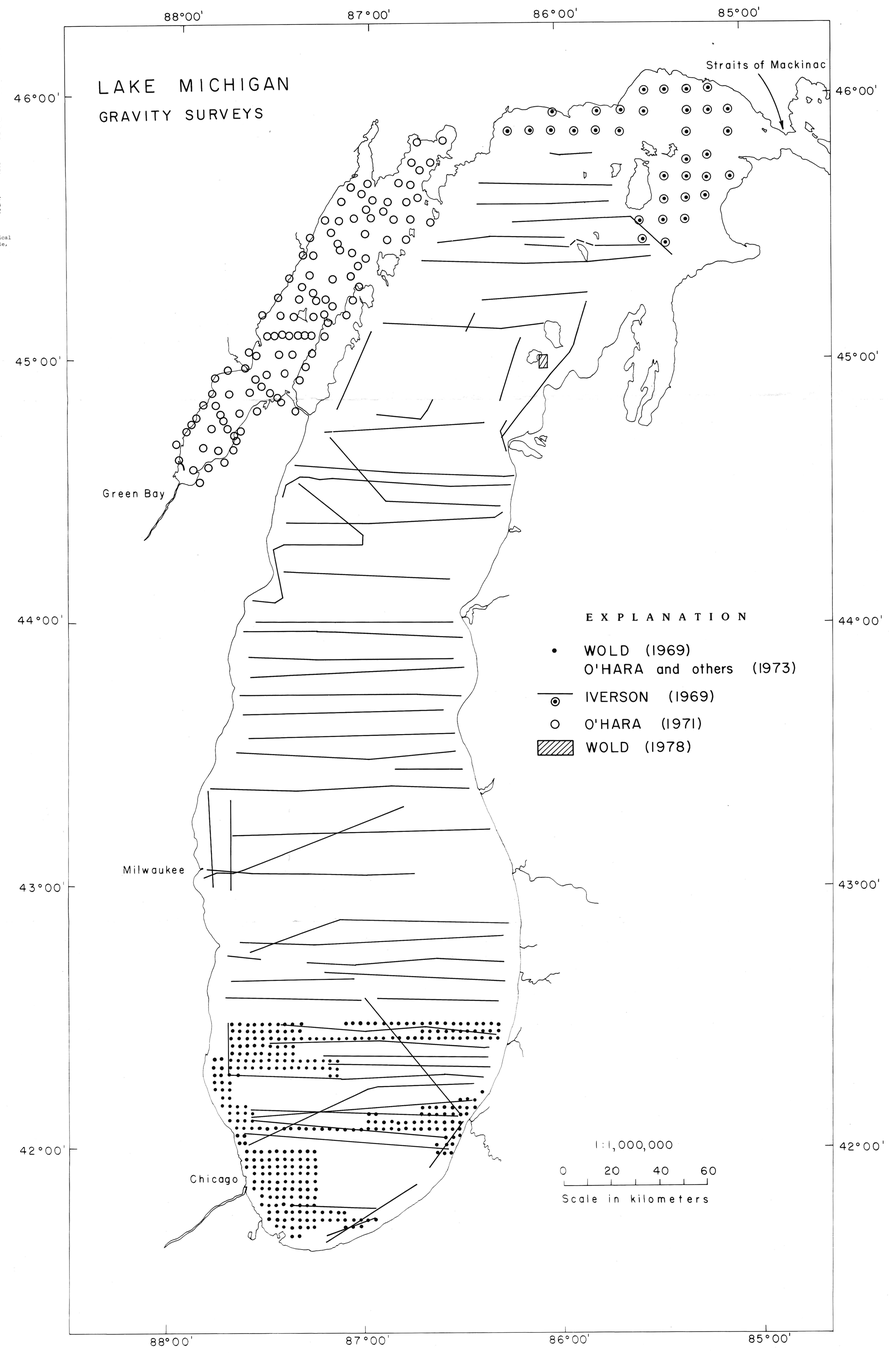
O'Hara, N.W., 1971, A regional geophysical investigation of the Green Bay area, In Proceedings Fourteenth Conference on Great Lakes Research, Toronto, Canada, 1971: International Association for Great Lakes Research, p. 355-367.

O'Hara, N.W., Wold, R.J., and Hinze, W.J., 1973, Regional gravity and magnetic study of southern Lake Michigan, southern Lake Michigan geophysical study, In Proceedings Sixteenth Conference on Great Lakes Research, Huron, Ohio, 1973: International Association for Great Lakes Research, p. 431-440.

O'Hara, N.W., Hinze, W.J., and Wold, R.J., 1973, Basement geology of Lake Michigan from gravity studies [abs.]: Geological Society of America, Abstracts with Programs, v. 7, no. 7, p. 756-757.

Wold, R.J., 1969, Gravity survey of the Great Lakes, in Final Report for the Corps of Engineers, U.S. Army Map Service Contracts DA-49(1)-eng-3319 and DACA71-67-c-0123: Milwaukee, Wisc., Univ. of Wisc., 112p.

Wold, R.J., 1970, Written communication: data on file with U.S. Geological Survey, Branch of Atlantic-Gulf of Mexico Marine Geology, Woods Hole, Mass.



LAKE MICHIGAN SAMPLING

Ayers, J.C., 1967, The surficial bottom sediments of Lake Michigan, In Ayers, J.C. and Chandler, D.C., eds., Studies on the environment and eutrophication of Lake Michigan: Univ. of Mich. Great Lakes Research Division, Special Rept. no. 30, p. 247-253.

Ayers, J.C. and Hough, J.L., 1964, Studies of water movements and sediments in southern Lake Michigan, Part II- the surficial bottom sediments in 1962-1963: Univ. of Mich. Great Lakes Research Division, Special Rept. no. 19, 47p.

Bretz, J.H., 1966, Correlation of glacial Lake stages in the Huron-Erie and Michigan Basins: Journal of Geology, v. 72, p. 618-627.

Buckley, S.B., 1974, Study of post-Pleistocene ostracod distribution in the soft sediments of southern Lake Michigan: Urbana, Ill., Univ. of Ill., unpublished Ph.D. thesis, 179p.

Cahill, R.A., Kuhn, J.K., and Dreher, G.B., 1977, Distribution of major, minor and trace elements in sediments of northern Lake Michigan [abs.], In Twentieth Conference on Great Lakes Research, Ann Arbor, Mich., 1977: International Association for Great Lakes Research.

Callender, E., 1969, Geochemical characteristics of Lake Michigan and Superior sediments, In Proceedings Twelfth Conference on Great Lakes Research, Ann Arbor, Mich., 1969: International Association for Great Lakes Research, p. 124-140.

Collinson, C. and Badal, J.C., 1972, Surficial sediments in southern Lake Michigan [abs.], In Proceedings Fifteenth Conference on Great Lakes Research, Madison, Wisc., 1972: International Association for Great Lakes Research, p. 18.

Collinson, C., Cross, D.L., White, W.A., Lineback, J.A. and Ayer, W.J., 1970, Stratigraphy of lacustrine sediments in southwestern Lake Michigan [abs.]: Geological Society of America, Abstracts with Programs, v. 2, no. 7, p. 382-383.

Cote, W.E., 1967, Grain-size analysis of sediments, southeastern Lake Michigan: Urbana, Ill., Univ. of Ill., unpublished M.S. thesis, 118p.

Davis, R.A., Jr., 1964, Sedimentation in the nearshore environment, southeastern Lake Michigan: Urbana, Ill., Univ. of Ill., unpublished Ph.D. thesis, 131p.

Davis, R.A., Jr., 1965, Underwater study of ripples, southeastern Lake Michigan: Journal of Sedimentary Petrology, v. 35, p. 857-864.

Davis, R.A., Jr., 1970a, Sedimentation in beach and nearshore environments of eastern Lake Michigan [abs.]: Geological Society of America, Abstracts with Programs, v. 2, no. 7, p. 533-534.

Davis, R.A., Jr., 1970b, Coastal sedimentation of southeastern Lake Michigan: Western Mich. Univ. Dept. of Geology Guidebook, Studies in Geology, no. 1, 50p.

Davis, R.A., Jr., and McGeary, D.F.R., 1965, Stability in nearshore bottom topography and sediment distribution, southeastern Lake Michigan, In Proceedings Eighth Conference on Great Lakes Research, Ann Arbor, Mich., 1965: Univ. of Mich. Great Lakes Research Division, Publication no. 13, p. 222-231.

Edgington, D.N., and Callender, E., 1970, Minor element geochemistry of Lake Michigan ferromagansese nodules: Earth and Planetary Science Letters, v. 8, p. 97-100.

Fisher, R.O., 1954, Some characteristics of bottom sediments along the Illinois shoreline of Lake Michigan: In Proceedings Fourth Conference on Coastal Engineering, Council on Wave Research, Univ. of Calif., Berkely, Calif., p. 107-118.

Fitchko, J., and Hutchinson, T.C., 1975, A comparative study of heavy metal concentrations in river mouth sediments around the Great Lakes: Journal of Great Lakes Research, v. 1, p. 46-78.

French, W.E., 1964, A correlation of currents and sedimentary activity in the Manitou Passage area of Lake Michigan, In Proceedings Seventh Conference on Great Lakes Research, Toronto, Canada, 1964: Univ. of Mich. Great Lakes Research Division, Publication no. 11, p. 142-146.

French, W., 1965, The sedimentary environment and geological evolution of the Manitou Passage area of Lake Michigan: Ann Arbor, Mich., Univ. of Mich., unpublished Ph.D. thesis.

Frye, J.C., and Shimp, N.F., 1973, Major, minor and trace elements in sediments of Lake Pleistocene, Lake Saline compared with those in Lake Michigan sediments: Ill. State Geological Survey, Environmental Geology Note no. 60, 14p.

Graf, J.B., 1976, Nearshore sediments of the Illinois shore of Lake Michigan: Journal of Great Lakes Research, v. 2, p. 283-293.

Great Lakes Research Division, 1968, Project Submich: University of Michigan Great Lakes Research Division Special Report no. 33, 33p.

Gross, D.L., 1978, Written communication: data on file with Ill. State Geological Survey, Urbana, Ill.

Gross, D.L., Coleman, D.D., and Lineback, J.A., 1973, Sedimentation rates in the deep water areas of southern Lake Michigan [abs.], In Sixteenth Conference on Great Lakes Research, Abstracts, Huron, Ohio, 1973: International Association for Great Lakes Research, p. 123-124.

Gross, D.L. and Lineback, J.A., 1970, Age and stratigraphy of Pleistocene sediments in southern Lake Michigan [abs.]: Geological Society of America, Abstracts with Programs, v. 2, no. 7, p. 563-564.

Gross, D.L., Lineback, J.A., Shimp, N.F., and White, W.A., 1972, Composition of Pleistocene sediments in southern Lake Michigan, U.S.A.: International Geological Congress, 24th, Montreal, Canada, section 8, p. 215-222.

Gross, D.L., Lineback, J.A., White, W.A., Ayer, W.J., Collinson, C., and Leland, H.V., 1970, Preliminary stratigraphy of unconsolidated sediments from the southwestern part of Lake Michigan: Ill. State Geological Survey, Environmental Geology Note no. 30, 29p.

Hedrick, L.R., Soyugenc, M., and Larsen, L., 1966, Yeast in sediment core samples from Lake Michigan, In Proceedings 9Ninth Conference on Great Lakes Research, Chicago, Ill., 1966: Univ. of Mich. Great Lakes Research Division, Publication no. 15, p. 27-37.

Henson, E.B. and Herrington, E.B., 1965, Sphaeriidae (Mollusca: Pelecypoda) of Lakes Huron and Michigan in the vicinity of the Straits of Mackinac, In Proceedings Eighth Conference on Great Lakes Research, Ann Arbor, Mich., 1965: Univ. of Mich. Great Lakes Research Division, Publication no. 13, Ann Arbor, Michigan, p. 77-95.

Hockings, W.A., Rose, D.R., and Snelgrove, A.K., 1969, Technological aspects of manganese nodules in Lake Michigan: Skillings Mining Review, v. 58, no. 43, p. 8-9.

Hough, J.L., 1935, The bottom deposits of southern Lake Michigan: Journal of Sedimentary Petrology, v. 5, p. 57-80.

Hough, J.L., 1955, Lake Chippewa, a low stage of Lake Michigan indicated by bottom sediments: Geological Society of America Bulletin, v. 66, p. 957-968.

Hough, J.L., 1966, Correlation of glacial lake stages in the Huron, Erie and Michigan Basins: Journal of Geology, v. 74, p. 62-77.

Hough, J.L., 1967, Geological studies of Lake Michigan, In Ayers, J.C. and Chandler, D.C., eds., Studies on the environment and eutrophication of Lake Michigan: Univ. of Mich. Great Lakes Research Division, Special Rept. no. 30, p. 228-246.

Kennedy, E.J., Roch, R.R., and Shimp, N.F., 1971, Distribution of mercury in unconsolidated sediments from southern Lake Michigan: Ill. State Geological Survey, Environmental Geology Note no. 44, 18p.

King, J.E., Lineback, J.A., and Gross, D.L., 1976, Palynology and sedimentology of Holocene deposits in southern Lake Michigan: Ill. State Geological Survey, Circular 496, 24 p.

Lauff, G.H., Henson, E.B., Ayers, J.C., Chandler, D.C., and Powers, C.F., 1961, The bottom sediments of the Straits of Mackinac region: Univ. of Mich. Great Lakes Research Division, Publication no. 6, Ann Arbor, Mich., 69p.

Lineback, J.A., Ayer, W.J., and Gross, D.L., 1970, Stratigraphy of unconsolidated sediments in the southern part of Lake Michigan: Ill. State Geological Survey, Environmental Geology Note no. 35, 35p.

Lineback, J.A. and Gross, D.L., 1972a, Depositional patterns, facies, and trace element accumulation in the Haskegan member of the Late Pleistocene Lake Michigan Formation in southern Lake Michigan: Ill. State Geological Survey, Environmental Geology Note no. 58, 25p.

Lineback, J.A. and Gross, D.L., 1972b, Topset, foreset, and bottomset beds in southern Lake Michigan [abs.]: Geological Society of America, Abstracts with Programs, v. 4, no. 5, p. 334.

Lineback, J.A., Gross, D.L., and Meyer, R.P., 1972, Geologic cross sections derived from seismic profiles and sediment cores from southern Lake Michigan: Ill. State Geological Survey, Environmental Geology Note no. 54, 43p.

Lineback, J.A., Gross, D.L., and Meyer, R.P., 1974, Glacial tills under Lake Michigan: Ill. State Geological Survey, Environmental Geology Note no. 69, 48p.

Lineback, J.A., Gross, D.L., Meyer, R.P., and Unger, W.L., 1971, High-resolution seismic profiles and sediment cores from southern Lake Michigan: Ill. State Geological Survey, Environmental Geology Note no. 47, 32p.

Moore, J.E., 1964, Petrography of northeastern Lake Michigan bottom sediments: Journal of Sedimentary Petrology, v. 31, p. 402-436.

Moore, R.J., 1970, Manganese-rich pellets in Green Bay, an exploitable mineral resource of the Great Lakes: Offshore Technology Conference, Second, Proceedings, Houston, Tex., 1970, p. I-11 - I-24.

Moore, J.R. and Meyer, R.P., 1969, Progress report on the geological-geophysical survey of Green Bay, 1968: Univ. of Wisc. Sea Grant College, Technical Rept. no. 1, 16p.

Nebrija, E.L., Welkie, C.J., and Meyer, R.P., 1978, Geophysical-geological exploration and evaluation of offshore sand and gravel deposits: Offshore Technology Conference, Tenth, Proceedings, Houston, Tex., 1978, p. 1187-1198.

Plate, P.A., 1972, Distribution of cesium-137 and natural occuring radionuclides in sediments of Lake Michigan: Radiation Data Reports, 13, no. 4, p. 181-187.

Rea, D.K. and Pigula, J.D., 1977, Sediment distribution and inferred transport processes in Little Traverse Bay, Lake Michigan [abs.], In Twentieth Conference on Great Lakes Research, Abstracts, Ann Arbor, Mich., 1977: International Association for Great Lakes Research.

Robbins, J.A., and Edgington, D.N., 1975, Determination of recent sedimentation rates in Lake Michigan using Pb-210 and Cs-137: Geochimica et Cosmochimica Acta, v. 39, p. 285-304.

Robbins, J.A. and Edgington, D.N., 1977, Major and minor elements in sediments of southern Lake Michigan [abs.], In Twentieth Conference on Great Lakes Research, Abstracts, Ann Arbor, Mich., 1977: International Association for Great Lakes Research.

Rossmann, R., 1973, Chemistry of nearshore surficial sediments from southern Lake Michigan: Univ. of Mich. Great Lakes Research Division, Special Rept. no. 57, 62p.

Rossmann, R. and Callender, E., 1968, Manganese nodules in Lake Michigan: Science, v. 162, p. 1123-1124.

Rossmann, R., and Callender, E., 1969, Geochemistry of Lake Michigan manganese nodules, In Proceedings Twelfth Conference on Great Lakes Research, Ann Arbor, Mich., 1969: International Association for Great Lakes Research, p. 306-316.

Rossmann, R., and Seibel, E., 1977, Surficial sediment redistribution by wave energy, element-grain size relationships: Journal of Great Lakes Research, v. 3, p. 258-262.

Roth, R.R., Kennedy, E.J., and Shimp, N.F., 1970, Distribution of arsenic in unconsolidated sediments from southern Lake Michigan: Ill. State Geological Survey, Environmental Geology Note no. 37, 16p.

Schelske, C.L. and Roth, J.C., 1973, Limnological survey of Lakes Michigan, Superior, Huron, and Erie: Univ. of Mich. Great Lakes Research Division, Publication no. 17, 118p.

Schleicher, J.A. and Kuhn, J.K., 1970, Phosphorus content in unconsolidated sediments from southern Lake Michigan: Ill. State Geological Survey, Environmental Geology Note no. 39, 19p.

Seibel, E., Jensen, R.E., and Carlson, C.T., 1974, Surficial sediment distribution of the nearshore waters in southeastern Lake Michigan, In Seibel, E. and Ayers, J.C., eds., The biological, chemical and physical character of Lake Michigan in the vicinity of the Donald C. Cook nuclear plant: Univ. of Mich. Great Lakes Research Division, Special Rept. no 51, p. 369-431.

Shea, J.H., 1964, Petrology and stratigraphy of sediments from southern and central Lake Michigan: Urbana, Ill., Univ. of Ill., unpublished Ph.D. thesis, 92p.

Shimp, N.F. and Leland, H.V., 1970, Distribution of trace elements in unconsolidated sediments of southern Lake Michigan [abs.]: Geological Society of America, Abstracts with Programs, v. 2, no. 7, p. 681-682.

Shimp, N.F., Leland, H.V., and White, W.A., 1970, Distribution of major, minor, and trace constituents in unconsolidated sediments from southern Lake Michigan: Ill. State Geological Survey, Environmental Geology Note no. 32, 19p.

Shimp, N.F., Schleicher, J.A., Roch, R.R., Heck, D.R., and Leland, H.V., 1971, Trace element and organic carbon accumulation in the most recent sediments of southern Lake Michigan: Ill. State Geological Survey, Environmental Geology Note no. 41, 25p.

Silver, M.L., and Liteback, J.A., 1972, Velocity of sound in sediments cored from southern Lake Michigan: Ill. State Geological Survey, Circular 475, 18 p.

Snodgrass, D.B., 1952, A study of Lake Michigan bottom sediments: Urbana, Ill., Univ. of Ill., unpublished M.S. thesis.

Sommers, L.H., 1967, The representativeness of random bottom samples in four selected locations in Lake Michigan, In Ayers, J.C., and Chandler, D.C., eds., Studies on the environment and eutrophication of Lake Michigan: Michigan Great Lakes Research Division, Special Report no. 30, p. 255-258.

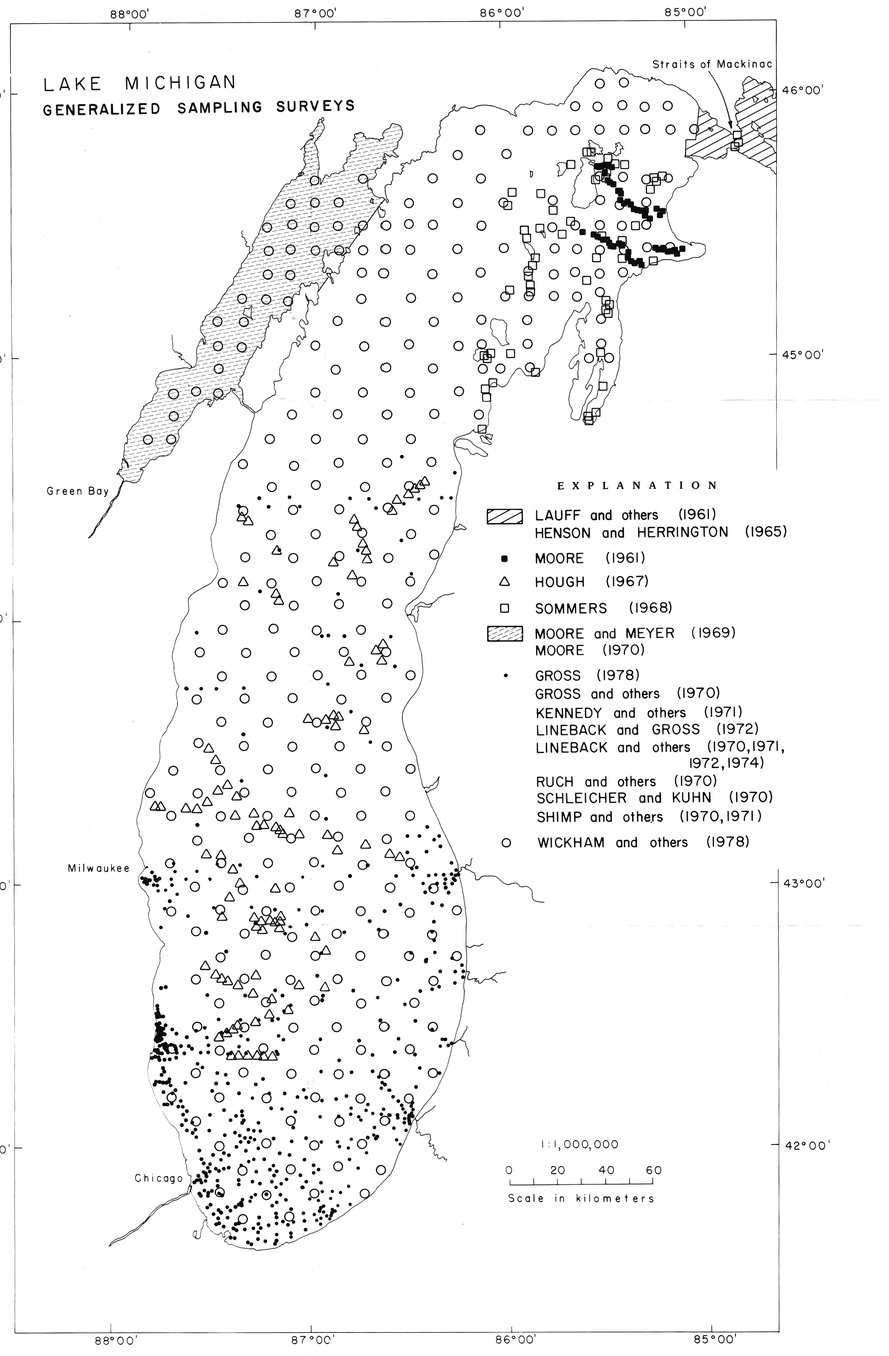
Sommers, L.H., 1968, Preliminary report on geological studies in northern Lake Michigan using underwater observation machniques, In Proceedings Eleventh Conference on Great Lakes Research, Milwaukee, Visc., 1968: International Association for Great Lakes Research, p. 239-244.

Sommers, L.H. and Josephson, P.D., 1968, Bottom sediments of southwestern Lake Michigan, In Proceedings Eleventh Conference on Great Lakes Research, Milwaukee, Visc., 1968: International Association for Great Lakes Research, p. 245-252.

Wahlgren, M.A. and Nelson, D.M., 1974, Studies of plutonium cycling and sedimentation in Lake Michigan, In Proceedings Seventeenth Conference on Great Lakes Research, Hamilton, Canada, 1974: International Association for Great Lakes Research, p. 212-218.

Wickham, J.T., Gross, D.L., Lineback, J.A., and Thomas, R.L., 1978, Late Quaternary sediments of Lake Michigan: Ill. State Geological Survey, Environmental Geology Note no. 84, 26p.

Williams, S.J., 1978, Written communication: data on file with Dept. of the Army, Coastal Engineering Research Center, Fort Belvoir, Va.



LAKE MICHIGAN MAGNETICS

Creer, K.M., Gross, D.L., and Lineback, J.A., 1976, Origin of regional geomagnetic variations recorded by Miocenian and Holocene sediments from Lake Michigan, U.S.A., and Lake Windermere, England: Geological Society of America Bulletin, v. 87, p. 531-540.

Keen, W.F., jr., Dodson, R. and Fuller, M.D., 1975, Continuous magnetic measurements of two long sediment cores from Lake Michigan [abs.]: Transactions of the American Geophysical Union (EOS), v. 56, p. 597.

O'Hara, N.W., 1971, A regional geophysical investigation of the Green Bay area, In Proceedings Fourteenth Conference on Great Lakes Research, Huron, Ohio, 1971: International Association for Great Lakes Research, p. 355-367.

O'Hara, N.W., and Hinze, W.J., 1971, Lake Michigan aeromagnetic Survey [abs.]: Seventeenth Annual Institute on Lake Superior Geology, Abstracts, Duluth, Minn., p.56.

O'Hara, N.W., and Hinze, W.J., 1972, Basement geology of the Lake Michigan area from aeromagnetic studies: Geological Society of America Bulletin, v. 83, p. 1771-1786.

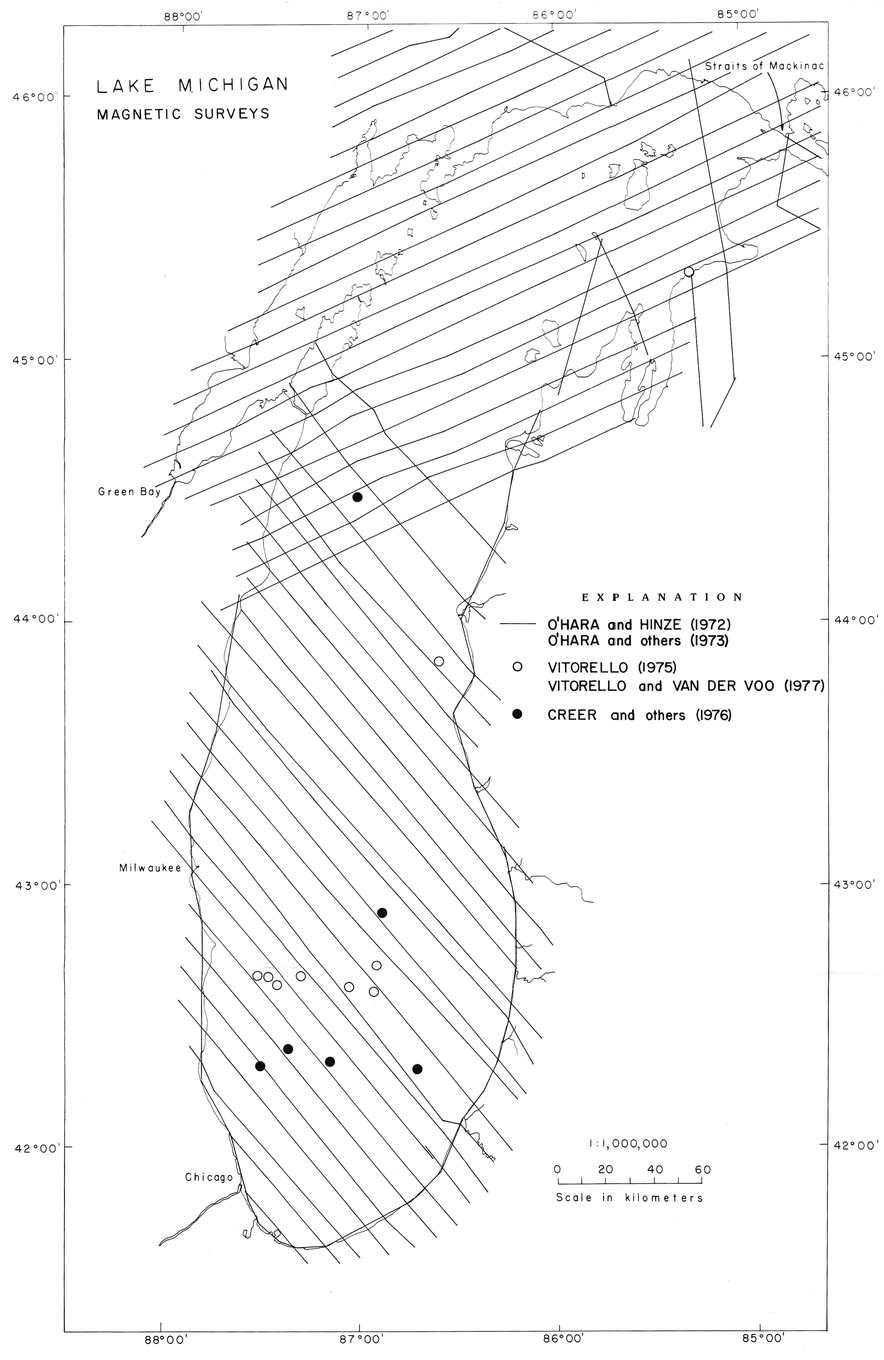
O'Hara, N.W., Wold, R.J., and Hinze, W.J., 1973, Regional gravity and magnetic study of Southern Lake Michigan, southern Lake Michigan geophysical study, In Proceedings Sixteenth Conference on Great Lakes Research, Huron, Ohio, 1973: International Association for Great Lakes Research, p. 431-440.

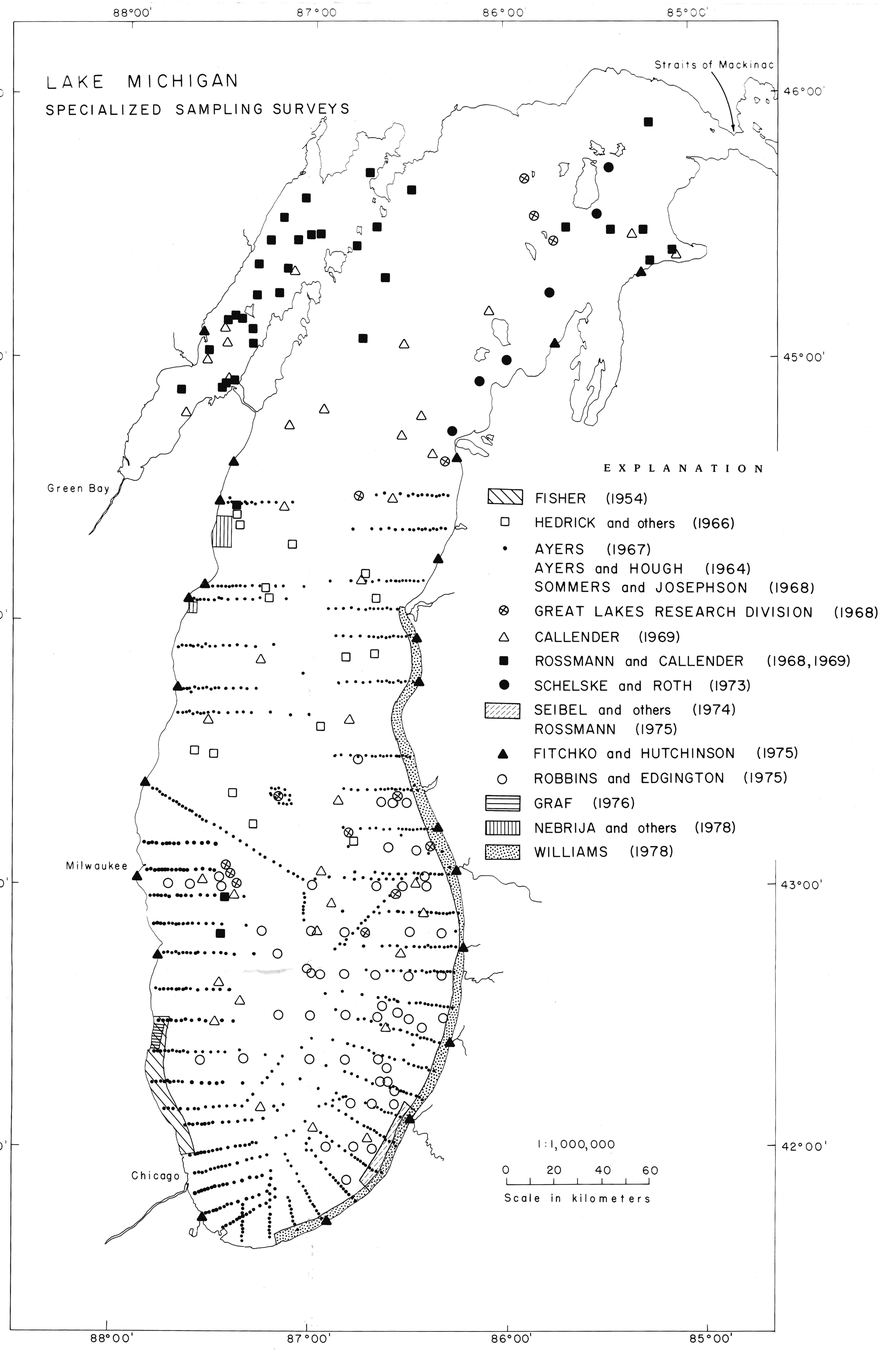
Vitorello, I., 1975, Paleomagnetic studies of Late Pleistocene and Holocene sediments from Lake Michigan cores: Ann Arbor, Mich., Univ. of Mich., unpublished M.S. thesis.

Vitorello, I. and Van der Voo, R., 1977, Magnetic stratigraphy of Lake Michigan sediments obtained from cores of lacustrine clay: Quaternary Research, v. 7, p. 398-412.

Vitorello, I., Williams, D., Mitchell, J., and Van der Voo, R., 1974, Paleomagnetism of Late Pleistocene and Holocene sediments from Lake Michigan cores [abs.]: Geological Society of America, Abstracts with Programs, v. 6, no. 7, p. 995-996.

Zietz, I., Kirby, J.R., Hinze, W.J., O'Hara, N.W. and Kellogg, L., 1974, Aeromagnetic map of Michigan and the adjacent Great Lakes: U.S. Geological Survey, Geophysical Investigations Map GP-894, 1:1,000,000.





Base from NOAA, National Ocean Survey chart No. 14900
Polyconic Projection

LAKE MICHIGAN GEOLOGICAL AND GEOPHYSICAL DATA SOURCES

By
Richard J. Wold and Deborah R. Hutchinson

1979

INTERIOR—GEOLOGICAL SURVEY, RESTON, VA.—1979

For sale by Branch of Distribution, U.S. Geological Survey, 1200 South Eads Street, Arlington, VA 22202